Cruise Plan
Regional Monitoring Program
Summer 2000 Bivalve Maintenance Cruise
August 11, 14-15, 2000

Objective

The objectives of this cruise are to check and maintain bivalve moorings at 12[1] sites in the San Francisco Estuary, and maintain the thermosalinograph deployed at the Napa River site.

Transplanted bivalves were deployed at 12 sites in June, 2000. Deployment duration is approximately 100 days. During this cruise, the primary objective will be the evaluation of mooring integrity by checking for abrasion of lines and security of knots and cable ties. The mesh bags containing the bivalves will be scrubbed with a nylon brush to remove fouling organisms. Additionally, the data from the thermosalinograph deployed at the Napa River station will be downloaded and the probe will be maintained.

Personnel

The personnel and work assignments for this cruise are as follows:

Name	Affiliation	Duties
David Bell	AMS	Cruise Manager, Dive Master
Nicole David	SFEI	Dive Tender on 8/14-15
Jordan Gold	AMS	Vessel Skipper on 8/11
David Morgan	Romberg Tiburon Institute	Vessel Skipper 8/14-15
Paul Salop	AMS	Diver
Ron Walder	AMS	Diver on 8/15
Don Yee	SFEI	Dive Tender on 8/11

Mr. Bell will be responsible for all scientific operations and safety. Messrs. Gold and Morgan will be responsible for vessel operation and safety on August 11 and August 14-15, respectively. Messrs. Salop and Walder will alternate dive duties. Mr. Yee will tend divers on August 11 and Ms. David will tend divers on August 14-15.

[1] No bivalves were deployed at the Grizzly Bay, Sacramento River, and San Joaquin River stations.

Cruise Schedule

The following cruise schedule assumes that approximately 0.5 hr will be required for operations at each site.

Date	Activity	Time
Day 1		
Aug. 11, 2000	Mobilize gear at Vallejo marina, conduct safety briefing aboard *ME II*, depart for Davis Point site.	0730-0800
	Examine and maintain mooring at Davis Point and Napa River. The thermosalinograph will be retrieved and data downloaded to computer, then reinstalled at the mooring. Slack water at Davis Point before flood is at 0900, slack water before ebb is at 1429.	0800-1100
	Demobilize gear at Emeryville marina and fill SCUBA tanks.	1100-1300
Day 2		
Aug. 14, 2000	Mobilize gear at Emeryville marina, conduct safety briefing aboard *R/V Questuary*, depart for Alameda site.	0700-0730
	Examine and maintain moorings at Alameda, Coyote Creek, Dumbarton Bridge, Redwood Creek, and Yerba Buena Island. Slack water at Oyster Point before flood is at 0730, slack water before ebb is at 1358.	0730-1300
	Demobilize gear at Emeryville marina and fill SCUBA tanks as necessary.	1300-1400
Day 3		
Aug. 15, 2000	Mobilize gear at Emeryville marina aboard *R/V Questuary*, depart for Horseshoe Bay site.	0700-0730
	Examine and maintain moorings at Horseshoe Bay, Red Rock, Pinole Point, San Pablo Bay and Petaluma River. Slack water at Pinole Point before flood is at 0856, slack water before ebb is at 1544.	0730-1330
	Demobilize gear at Emeryville marina.	1330-1400

Mooring Examination and Maintenance Procedures

All diving operations will be conducted by divers working in pairs and tethered together. The vessel will be tied to the surface marker for each mooring. The divers will descend to the bottom and locate the ground line to the mooring. When the ground line has been located, its attachment to the piling will be examined by feeling for abrasion and looseness in the knots and cable ties. After this examination, the divers will proceed along the ground line checking its integrity. At the mooring, the earth anchors will be checked to confirm that they have not worked out of the bottom and that serious erosion of bottom sediments has not occurred around them. All knots will be checked for secureness and the

presence of intact cable ties. When the integrity of all lines and knots has been verified and any problems have been corrected, the divers will ascend the mooring line to the bivalve bags and use nylon brushes to gently scrub all debris and fouling organisms from the bags; the prototype bivalve "cage" deployed at the San Pablo site will receive no maintenance. After the bags have been scrubbed, the divers will return to the surface by retracing their route along the ground line and piling. Spare line, earth anchors and buoys will be onboard the vessel if replacements are required.

After completion of the bivalve mooring maintenance at the Napa River station, the divers will return to the piling and proceed with the thermosalinograph maintenance. The divers will proceed out the thermosalinograph ground line until reaching its mooring. The lead diver will detach the thermosalinograph at its shackles, and the divers will then return to the ME II with the unit. Onboard the vessel, the divers will download the data and perform required maintenance. The divers will then return the thermosalinograph back to its mooring to complete the dive.

Site Locations

The geographic coordinates for the sites are listed in Table 1.

Table 1. Coordinates of Regional Monitoring Program Bivalve Deployment

Site Name/Code	Latitude (N)	Longitude (W)	Comments
Coyote Creek BA10	37° 28.19'	122° 03.83'	Channel marker "18"
Dumbarton Bridge BA30	37° 30.80'	122° 08.08'	Channel marker "14"
Redwood Creek BA40	37° 32.82'	122° 11.70'	Channel marker "4"
Alameda BB71	37° 41.73'	122° 20.38'	Channel marker "1" 1.65 nmi. SE of Hunters Point
Yerba Buena Island BC10	37° 49.12'	122° 20.81'	Dolphin 0.1 nmi. N of Bay Bridge
Horseshoe Bay BC21	37° 49.87'	122° 28.65'	Dolphin 100 ft W of fishing pier
Red Rock BC60	37° 55.70'	122° 28.13'	Channel marker "2" for Larkspur ferry terminal
Pinole Point BD30	38° 01.00'	122° 22.05'	Channel marker "P"
San Pablo Bay BD20	38° 02.72'	122° 25.71'	Channel marker "1"
Petaluma River BD15	38° 06.77'	122° 30.05'	NE end of railroad bridge
Davis Point BD40	38° 03.26'	122° 15'.63	E side of UNOCAL loading dock

Site Name/Code	Latitude (N)	Longitude (W)	Comments
Napa River BD50	38° 04.84’	122° 14.82’	Mare Island Strait adjacent to General Foods facility, 0.7 nmi. from channel marker “2”
Grizzly Bay BF20	38° 06.49’	122° 03.37’	Channel marker “9” 1.0 nmi. NW of Garnet Point
Sacramento River BG20	38° 03’.58	121° 47.50’	Channel marker “8” N of Sherman Island
San Joaquin River BG30	38° 01.27’	121° 48.32’	Channel marker “8” 0.75 nmi. E of Antioch Marina

Bivalve Deployments

Bivalves deployed during the previous cruise are indicated in Table 2.

Table 2. Bivalve deployments from June, 2000.

Site Name	Site Code	New Mooring	Cages (# bivalves)	Bagged MCAL	Bagged MEDU	Bagged CGIG
Coyote Creek	BA10	1		79	79	99
Dumbarton Bridge	BA30			39	40	140
Redwood Creek	BA40		116 MCAL	40	40	31
Alameda	BB71			110	40	35
Yerba Buena Island	BC10		120 MCAL	40	80	
Horseshoe Bay	BC21		80 MCAL	79	40	
Red Rock	BC61			160	40	
Petaluma River	BD15			40	40	134
San Pablo Bay	BD20		144 CGIG	40		
Pinole Point	BD30			98	40	32
Davis Point	BD40			40	40	144
Napa River	BD50		36 CGIG	80	80	103